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TO: FILE

FROM: Jim Pawloski P.E., Hydrologic Studies and Dam Safety Unit
Water Resources Division

DATE: October 8, 2018

SUBJECT: Edenville Dam – Dam ID 549, Gladwin County

On October 4, 2018, following the issuance of a Federal Energy Regulatory Commission (FERC) order revoking the license of the dam's owner, Boyce Hydro, LLC, to generate hydroelectricity at the Edenville Dam (issued September 10, 2018 and effective September 25, 2018); Luke Trumble, P.E. and I met with the dam owner and performed a cursory inspection of the dam. Upon revocation of the FERC license, the dam has reverted to the State's regulatory authority under Part 315, Dam Safety, of the Natural Resources and Environmental Protection Act, 1994, PA 451, as amended.

During the inspection, the dam was observed to be in fair structural condition. Its earthen embankments were well maintained, with only a few bare spots, minor erosion, and no visible signs of significant distress (sloughs, slumps, differential settlement, cracking, sinkholes, etc.) All embankment drains appeared to be functioning. The dam's two concrete spillways showed signs of moderate deterioration (spalling, exposed reinforcing steel, minor cracking and efflorescence), but appeared to be stable and functioning normally. All spillway gates appeared to be operational. No flow was discharging through the dam's powerhouse, but the structure and generating equipment appeared to be in fair condition as well. As such, there were no observed deficiencies that would be expected to cause immediate failure of the dam.

On the date of the inspection, the water level in the impoundment (Wixom Lake) was surveyed and observed to be approximately 4.1 feet below its normal pool elevation. Flow was being diverted through four open radial tainter gates, two at the Tittabawassee spillway and two at the Tobacco spillway. The attached photographic log contains photos and captions which capture the condition of the dam on the date of the inspection.

Attachment.

**Edenville Dam – Dam ID No. 549
Gladwin County**



Photograph 1 – Upstream face of left Tobacco embankment.



Photograph 2 – Crest of left Tobacco embankment.

**Edenville Dam – Dam ID No. 549
Gladwin County**



Photograph 3 – Downstream face of left Tobacco embankment.



Photograph 4 – Foot traffic erosion at left Tobacco embankment.

**Edenville Dam – Dam ID No. 549
Gladwin County**



Photograph 5 – Upstream face of right Tobacco embankment



Photograph 6 – Crest of right Tobacco embankment.

**Edenville Dam – Dam ID No. 549
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Photograph 7 – Downstream face of right Tobacco embankment.



Photograph 8 – Piezometers at right Tobacco embankment.

**Edenville Dam – Dam ID No. 549
Gladwin County**



Photograph 9 – Tobacco spillway viewed from downstream.

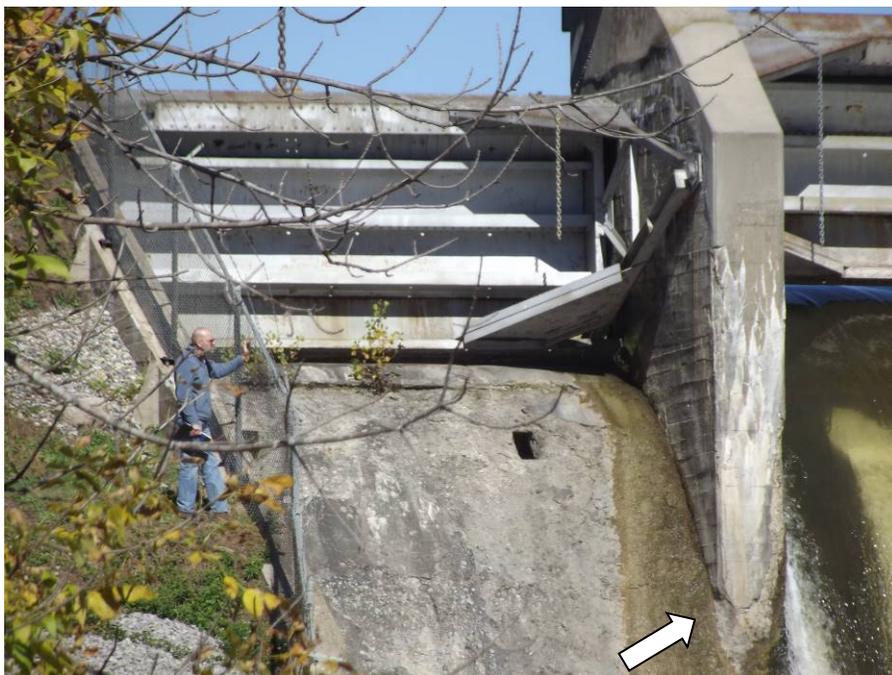


**Photograph 10 – Left gate of Tobacco spillway.
Note the moderate appalling of pier nose.**

**Edenville Dam – Dam ID No. 549
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**Photograph 11 – Center gate of Tobacco spillway.
Note the moderate spalling of pier noses.**



**Photograph 12 – Right gate of Tobacco spillway.
Note the moderate spalling of pier nose and spillway face.**

**Edenville Dam – Dam ID No. 549
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**Photograph 13 – Left upstream abutment wall of Tobacco spillway.
Note the significant spalling and exposed reinforcing steel at top of wall.**



**Photograph 14 – Right upstream abutment wall of Tobacco spillway.
Note the moderate spalling at the top of wall.**

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**Photograph 15 – Upstream face of Tobacco spillway.
Note the moderate spalling of pier noses.**



Photograph 16 – Downstream left abutment wall of Tobacco spillway.

**Edenville Dam – Dam ID No. 549
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Photograph 17 – Erosion behind left abutment wall.



Photograph 18 – Downstream right abutment wall of Tobacco spillway.

**Edenville Dam – Dam ID No. 549
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**Photograph 19 – Erosion behind right abutment wall.
Note the dead men and tie-backs and rotation of lower wall.**



Photograph 20 – Upstream face of right Tittabawassee embankment.

**Edenville Dam – Dam ID No. 549
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Photograph 21 – Crest of right Tittabawassee embankment.



Photograph 22 – Downstream face of right Tittabawassee embankment.

**Edenville Dam – Dam ID No. 549
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Photograph 23 – Upstream face of left Tittabawassee embankment.



Photograph 24 – Crest of left Tittabawassee embankment.

**Edenville Dam – Dam ID No. 549
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Photograph 25 – Downstream face of left Tittabawassee spillway.



Photograph 26 – Tittabawassee spillway and powerhouse.

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**Photograph 27 – Right gate of Tittabawassee spillway.
Note the moderate spalling of pier nose.**



**Photograph 28 – Center gate of Tittabawassee spillway.
Note the moderate spalling of pier nose.**

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Photograph 29 – Left gate of Tittabawassee spillway.



**Photograph 30 – Upstream right abutment wall of Tittabawassee spillway.
Note the significant spalling and exposed reinforcing steel at top of wall.**

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**Photograph 31 – Upstream left abutment wall of Tittabawassee spillway.
Note the significant spalling and exposed reinforcing steel at top of wall.**



**Photograph 32 – Downstream right abutment wall of Tittabawassee spillway.
Note the significant spalling, cracking and efflorescence throughout.**

**Edenville Dam – Dam ID No. 549
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Photograph 33 – Downstream left abutment wall of Tittabawassee spillway.



Photograph 34 – Failing retaining wall downstream of left abutment.

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**Photograph 35 – Upstream face of Tittabawassee spillway.
Note the significant spalling and exposed reinforcing steel throughout.**



Photograph 36 – Right generating unit.

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Photograph 37 – Left generating unit.



Photograph 38 – Left turbine shaft.

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Photograph 39 – Left wicket gates.



Photograph 40 – Right turbine shaft.

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Photograph 41 – Right wicket gates.



Photograph 42 – Wixom Lake viewed from Tobacco side.

**Edenville Dam – Dam ID No. 549
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Photograph 43 – Downstream Tobacco River channel.



Photograph 44 – Wixom Lake viewed from Tittabawassee side.

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Photograph 45 – Downstream Tittabawassee River channel.